



Ladoga seismic observations

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The Saint-Petersburg region and surrounding is characterized by very high level of man-caused seismic activity. Annually about 700 seismic events occur here. Up to 2006 only Finnish seismic network has operated in this border region but now permanent digital seismic registration is organized in the region including the Valamo archipelago (central part of the northern Ladoga). Station is situated on the south-west of the Valamo Island; it is equipped by short period three component seismometers Teledyne Geotech GS-13. Earlier we have already reported about numerous Ladoga historical seismic events with magnitudes $M = 2-3$ that were revealed in the result of Valamo Cloister archive data research. According to these data event macroseismic effect looked like sounds – strokes but sometimes there were ground shakings. The lasts were felt in 1911, 1926, 1927 and 1932 on the west side of the Valamo Island and as vertical shocks on other islands of archipelago (Vossinaynsaari, Muykeruykki). Epicentral zones of these events were situated on the western part of the Ladoga at a distance of about 20 km from Valamo. We offered also some tectonic and non-tectonic hypotheses of event origin. The long-term seismic registration coincidentally with macroseismic observation should to confirm or to disprove tectonic origin of mentioned above historical events. We have obtained first results. During half a year seismic station registered about 300 events probably quarry explosions from a distance of 40-150 km with magnitude M_L 0.5 – 2.7. About 30 occurrences were felt with intensity 3 around the station. Some of them are strong quarry explosions with magnitude $M_L \sim 2.5$ located at a distance of 40-50 km from the station. Conducted PGA seismogram simulation gives a value $\sim 0.1 \text{ cm/sec}^2$ that is real if to take into an account underground seismometer position. Other group of felt events occurred in water area at a distance not more 5 km from the station on a very shallow depth. Digital data processing in particular spectra evolution, polarization analysis, wavelet

transformation were applied to reveal these events origin. Previously, we suppose the connection of seismic appearance with hydrodynamic and geodynamic features of the Ladoga Lake.